VAUGHAN®

ITM. / ART. 3456100
Model : 050208CCI

DIGITAL INFRARED THERMOMETER
INSTRUCTION MANUAL

THIS MANUAL CONTAINS IMPORTANT INFORMATION REGARDING SAFETY, OPERATION, MAINTENANCE AND STORAGE OF THIS PRODUCT. BEFORE USE, READ CAREFULLY AND UNDERSTAND ALL CAUTIONS, WARNINGS, INSTRUCTIONS AND PRODUCT LABELS. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE.

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INTENDED USE

This product is intended for consumer use only. It is designed to be used for non-contact temperature measurement by measuring the amount of infrared energy radiated from the object's surface.

GENERAL SAFETY RULES

⚠ WARNING **READ AND UNDERSTAND ALL INSTRUCTIONS.** Failure to follow all instructions in this manual may result in severe personal injury or death. Keep this manual and refer to it for Safety Instructions, Operating Procedures and Warranty.

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

RECOGNIZE SAFETY SYMBOLS, WORDS AND LABELS

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

LASER SAFETY

⚠ WARNING

Pointing a laser and interfering with the operation of an aircraft is a felony punishable by fine and imprisonment.

The laser guide used in the tool is Class 2.

The laser shall be used and maintained in accordance with the manufacturer's instructions.

The use of optical instruments with this product will increase eye hazard.

IR Thermometer Label

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Do not stare into the laser beam or point to others eyes.

Never aim the beam at any person or an object other than the work piece.

Avoid indirect exposure via reflective surfaces, such as glass and mirrors.

Store out of reach of children. Equipment should be in a high location or locked up to keep out of reach of children. It is not a toy.

Do not tamper with the laser output. Changing the performance of the laser to increase its output is prohibited. Any claim for damages or injuries resulting from not following these instructions will be refused.

Never operate laser if the unit is defective or the cover or seal is damaged.

There are no user-serviceable parts in the laser device. The laser unit must be returned to the factory for any service or repair. Service or repair must be handled by authorized factory trained technicians.

Be careful with this tool. Striking or jarring it, especially on the laser housing can affect its accuracy.

TOOL USE AND CARE

⚠ WARNING

Use the product only as specified in this manual.

Avoid exposing this device to EMF (electro-magnetic fields) from arc welders, induction heaters, etc. OR exposing to static electricity.

To prevent sensor damage, do not point the sensor lens directly at the sun or any other source of strong infrared light.

⚠ CAUTION

Do not leave the thermometer on or near objects of high temperature exceeding 70°C (158°F).

Be certain there is no condensation on the lens prior to taking measurements. Allow 10 minutes for condensation to dissipate as needed.

Shiny surfaces result in lower than actual temperature measurements.

For the most accurate temperature measurements, aim the infrared thermometer perpendicular to the target.

The IR thermometer cannot measure through transparent surfaces such as glass and plastic. It will measure the surface temperature instead.

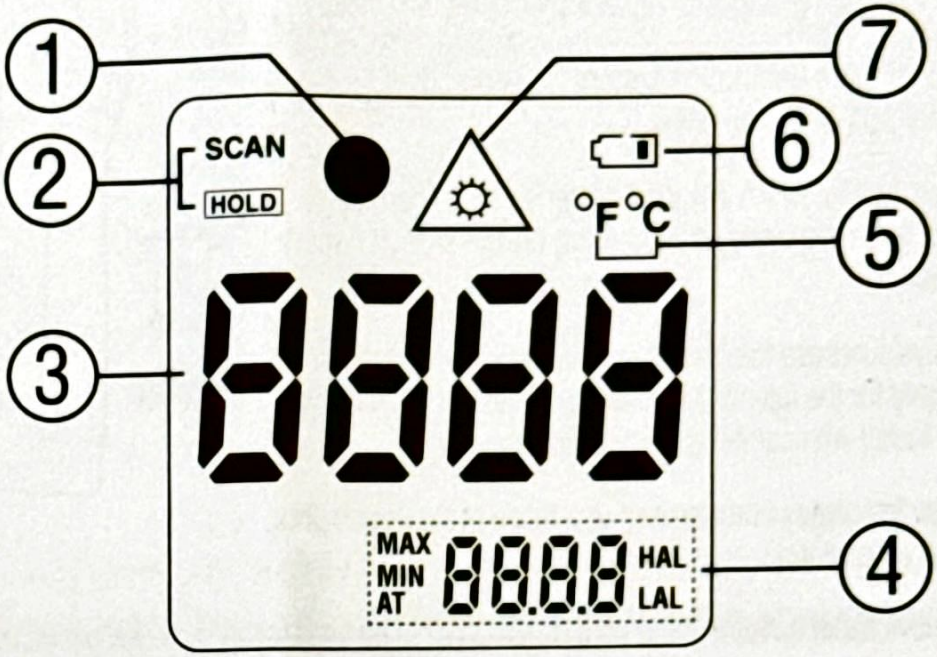
Steam, dust, smoke and/or vapours can prevent accurate measurement by obstructing the unit's optics. For better accuracy, keep the sensor perfectly clean.

Refer to the spot size information on the instrument (and in the manual) for the target spot size being measured at a given distance.

FUNCTIONAL DESCRIPTION

LCD INDICATIONS AND SYMBOLS

1. Alarm Indicator
2. Measurement and Data hold
3. Temperature reading
4. MAX (maximum temperature), MIN (minimum temperature), AT (ambient temperature), HAL (high alarm value), LAL (low alarm value), display area
5. Temperature unit symbol
6. Low battery indication symbol
7. Laser symbol



BUTTON FUNCTIONS

Press the trigger to turn on the thermometer.

Button: Press button to change the mode of MAX-MIN-AT-HAL-LALto check relate value.

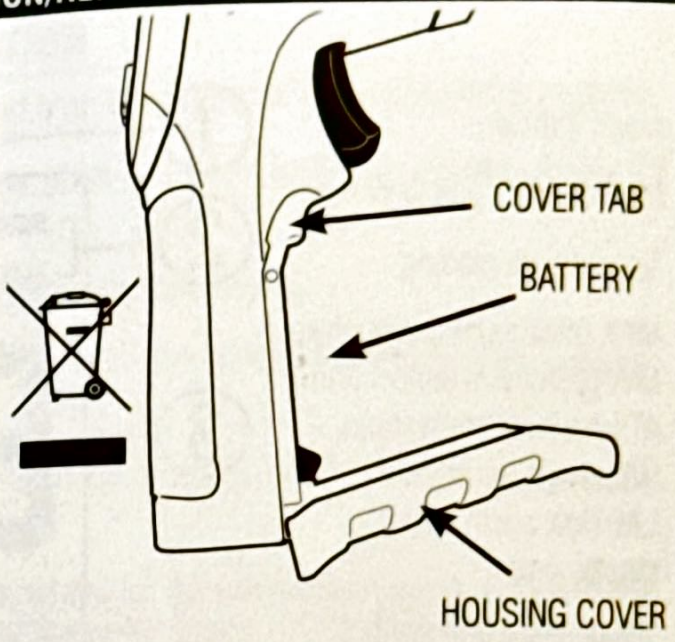
Button: Press the button to enter the setting mode, emissivity adjustment mode, high alarm value setting mode, low alarm value setting mode can be changed in turn. Press the button to increase the value and press the key to decrease the value. Press the the trigger button meter automatically saves the value and returns to the MAX mode.

Button: Press button to switch the temperature unit

BATTERY INSTALLATION/REPLACEMENT

To maintain reading accuracy, when the low battery icon appears, replace thermometer's battery.

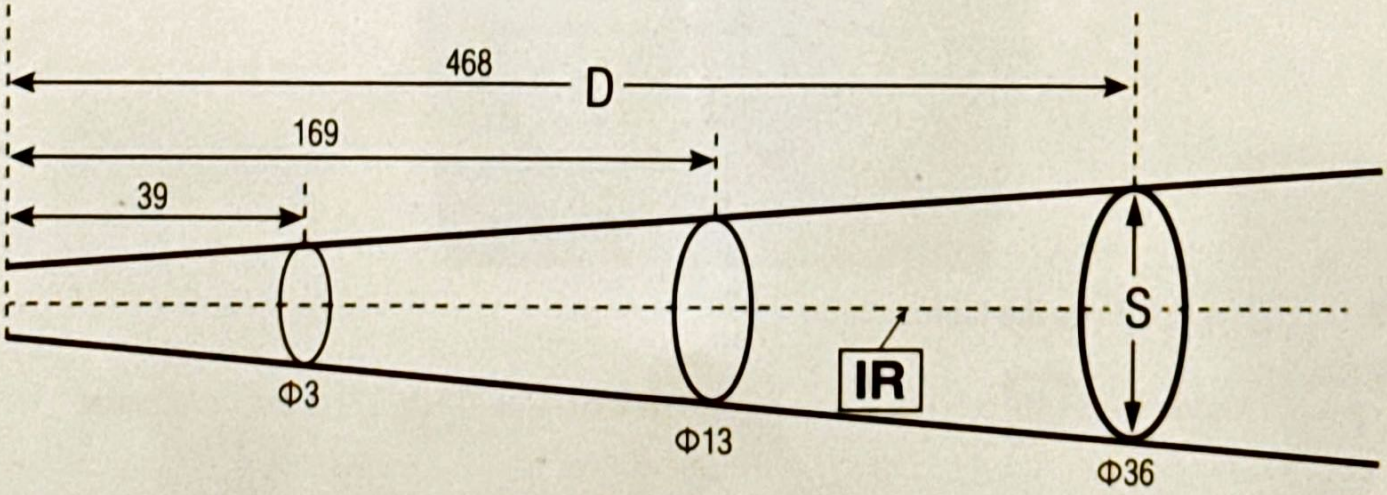
1. Place fingers behind the battery housing cover tabs and gently pull open the cover.
2. Insert two fresh AA Alkaline batteries (with correct polarity as shown by the marking on the side of battery housing).



- Always purchase the correct size and grade of battery most suitable for the intended use. Always replace both batteries and install with correct polarity inside thermometer.
- Clean the battery contacts and also those of the device prior to battery installation.
- Remove batteries from equipment which is not to be used for an extended period of time.
- Remove batteries if consumed or if product is to be left unused for a long time.

DISTANCE & SPOT SIZE

When the distance (D) between the thermometer and the object increases, the light spot (S) increases. The distance to the spot ratios are shown below in the field of view diagram.



Distance (D) to Spot Size (S)
D:S=13:1

Unit: Inch

Notes:

Accuracy can be ensured while the temperature is at 18°C to 28°C (64°F~82°F) and humidity is less than 80% RH.

Make sure the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

OPERATING INSTRUCTIONS

⚠ WARNING **Never aim the laser beam pointer at the eyes of a person or animal or an object other than the work piece.**

Follow these steps to measure surface temperature of an object in most applications. See next section for additional measurement features.

1) Hold the meter by its handle grip and point it toward the surface to be measured.
2) Pull and hold the Trigger to turn the meter on, the "SCAN" icon will appear and begin testing.
3) Release the trigger, the "HOLD" icon will appear, the readings will be frozen
4) The meter will automatically shut off after 25 seconds inactivity.

Measurement Note;

- If the meter used in an ambient temperature with a large temperature change, wait it at least 30 minutes to adjust it.

NOTE: Temperature measurement will not be accurate off shiny objects (such as stainless steel, gold, aluminum wrapping) or through glass or windows.

°C / °F TEMPERATURE UNIT SETTING

1. Briefly press the trigger to turn on the display.
2. Briefly press the

button to toggle between °C or °F. The selected unit is saved in the thermometer memory.

EMISSIVITY

The emissivity of the surface of a material is its effectiveness in emitting energy as thermal radiation. It is the ratio of the thermal radiation from a surface to the radiation from an ideal black surface at the same temperature. The ratio varies from 0 to 1. The bigger the ratio, the stronger the thermal radiation is from the surface. The emissivity of surface of most materials is between 0.85~0.98. The default emissivity of this unit is set at 0.95; however, it can be adjustable. Before measuring, please adjust it to the suitable emissivity according to below table.

Notes:

- **Most organic, painted, or oxidized surfaces have emissivity values close to 0.95. The default emissivity value of the thermometer is set at 0.95 which is suitable for most applications.**
- **Since the thermometer retains the emissivity setting in its memory, always check for emissivity to ensure that it is either set to default (0.95) or an emissivity value corresponding to the surface to be scanned (from Emissivity chart).**

Emissivity Of Some Common Materials

Surface Material	Emissivity	Surface Material	Emissivity	Surface Material	Emissivity
Aluminum Foil	0.04	Gold not polished	0.47	Paint	0.96
Aluminum Sheet	0.09	Gold polished	0.025	Paper	0.93
Aluminum Oxidized	0.2 - 0.31	Granite	0.45	Plaster, rough	0.91
Aluminum Polished	0.039 - 0.057	Gravel	0.28	Plastics	0.90 - 0.97
Aluminum Anodized	0.77	Gypsum	0.85	Polypropylene	0.97
Aluminum Rough	0.07	Ice smooth	0.966	Porcelain glazed	0.93
Asbestos board	0.96	Ice rough	0.985	PVC	0.91 - 0.93
Asbestos paper	0.93 - 0.945	Iron polished	0.14 - 0.38	Quartz glass	0.93
Asphalt	0.93	Iron, rusted red	0.61	Roofing paper	0.91
Black Body Matt	1	Iron, dark gray	0.31	Rubber, foam	0.9
Black lacquer on iron	0.875	Iron, rough ingot	0.87 - 0.95	Rubber, glossy	0.94
Black Silicone Paint	0.93	Lead un-oxidized	0.057 - 0.075	Rubber, natural hard	0.91
Black Epoxy Paint	0.89	Lead Oxidized	0.43	Salt	0.34
Black Enamel Paint	0.8	Limestone	0.90 - 0.93	Sand	0.76
Brass Dull Plate	0.22	Magnesite	0.38	Sandstone	0.59
Brass Polished	0.03	Magnesium Polished	0.07 - 0.13	Silica	0.79
Brick, red rough	0.93	Marble White	0.95	Silicon Carbide	0.83 - 0.96
Brick, fireclay	0.75	Masonry Plastered	0.93	Silver Polished	0.02 - 0.03
Carbon, not oxidized	0.81	Mercury liquid	0.1	Soil	0.90 - 0.95
Cast Iron	0.44	Mild Steel	0.20 - 0.32	Steel Oxidized	0.79
Cement	0.54	Mortar	0.87	Steel Polished	0.07
Clay	0.91	Nickel, electro-plated	0.03	Stainless Steel(SS)	0.85
Coal	0.8	Nickel, polished	0.072	SS, polished	0.075
Concrete	0.85	Nickel, oxidized	0.59 - 0.86	Steel Galvanized old	0.88

Concrete, rough	0.94	Oak, planed	0.89	Steel Galvanized New	0.23
Concrete tiles	0.63	Oil paints, all colors	0.92 - 0.96	Tile	0.97
Cotton cloth	0.77	Paper offset	0.55	Tin un-oxidized	0.04
Copper Polished	0.023 - 0.052	Plaster	0.98	Water	0.95 - 0.963
Copper Nickel Alloy	0.059	Pine	0.84	Wood Beech, planned	0.935
Glass smooth	0.92 - 0.94	Plaster board	0.91	Wood Oak, planned	0.885
Glass, Pyrex	0.85 - 0.95	Porcelain, glazed	0.92	Wood, Pine	0.95

CLEANING AND STORAGE

Clean the thermometer housing and the lens using only a soft cloth or cotton swab with water or medical alcohol. Do not let any liquid enter the case or sensor area. Allow the lens to fully dry before using the thermometer.

Avoid storing the unit in extreme temperature conditions. Do not store below -20°(-4°), or where the radiant temperature may exceed 60°(140°).

SPECIFICATIONS

Range	-50°C to 650°C (-58°F to 1200°F)
Accuracy	+/-2°C or +/- 2% (0°C to 650°C), which is greater +/-4°C (-50°C to 0°C) +/-4°F or +/-2% (32° F to 1200°F), which is greater +/-7°F (-58°F to 32° F)
Resolution	0.1°C (0.1°F)
Response Time	<500ms
Emissivity	Adjustable 0.1~1.0
Distance To Spot(D:S)	13:1
Spectral Response	8~14um
Diode Laser	Class 2,Total Power<1mW, Wavelength 630~670nm
Auto Power Off	After 25 seconds of inactivity
Operating Temp.	0°C to 50°C / 32°F to 122°F
Storage Temp.	-20°C to 60°C / -4°F to 140°F
Relative Humidity (RH)	10~95%(Operating),<80%(Storage)
Power Supply	2 pc. AA battery

*** IMPORTANT: Under adverse conditions (such as bright solar light outdoors or in the**

surrounding environment, weak reflection of the surface to be measured, and rough surface) measurement error can occur.

FCC INFORMATION

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTES

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